37063

EBASCO SERVICES INCORPORATED

160 Chubb Avenue, Lyndhurst, NJ 07071 (201) 460-1900

EBASCO

June 6, 1988

Mr Nigel A Robinson
Remedial Project Manager
26 Federal Plaza
New York, New York 10278

Subject: **REVIEW OF REVISED RI REPORT FOR ASBESTOS DISPOSAL SITE AT MILLINGTON, NEW JERSEY**

Dear Mr Robinson:

Please find enclosed our review of the revised RI Report prepared by Fred C. Hart Associates, Inc. for the National Gypsum Company. The Revised RI addresses only one of the four Asbestos Disposal Sites, i.e. the Millington Site. The remaining three sites (New Vernon Road, Great Swamp and White Bridge Road) will be the subject of a future revised report.

Our review addresses how the Revised RI Report responded to EPA's comments entitled "U.S. Environmental Protection Agency Comments on the Remedial Investigation Report, Asbestos Dump Site, Morris County, New Jersey, November 18, 1987 prepared by Fred C. Hart Associates." The review format repeats EPA's comment and then evaluates the response presented, if any, in the revised RI.

In general, the Revised RI remains deficient in characterizing the Millington Site. The three areas of deficiency include: air quality monitoring, surface water quality monitoring, and hydrogeologic monitoring. These areas remain inadequate to support the conclusions of the Risk Assessment. Our specific comments are included in the attachment.

If you have any questions regarding this review, please do not hesitate to call me at (201) 460-6194.

Very truly yours,

Thomas T. Griffin, P.E.
Site Manager

TTG:dmg

cc: D Sachdev

EBASCO SERVICES INCORPORATED

160 Chubb Avenue, Lyndhurst, NJ 07071 (201) 460-1900

EBASCO

REVIEW
OF
REMEDIAL INVESTIGATION REPORT
ASBESTOS DISPOSAL
MILLINGTON SITE
PREPARED BY
FRED C. HART ASSOCIATES

Comment A.1-1: In the report summary (p. 7-2), F. C. Hart concludes that although "uncovered asbestos at all four locations poses a risk through direct contact ... airborne asbestos does not pose a risk." This conclusion is based on results of air sampling conducted at the site, which indicated that asbestos air concentrations, when detected, were less than the TLV (0.5 fibers/cc for amosite amphibole asbestos). However, due to unrepresentative sampling conditions and analytical limitations (see Section B.6 for further discussion), the true nature and extent of asbestos contamination at the site may not have been adequately characterized. Therefore, the conclusion that airborne asbestos poses no public health threat is premature.

Response: To address this comment, F. C. Hart completed additional air monitoring at the Millington Site. The additional air monitoring consisted of two sampling events during March. As a result of these two monitoring events, F. C. Hart concludes "... there is no present risk at the site or surrounding area as a result of airborne asbestos fibers." However, the monitoring program again suffers from unrepresentative monitoring conditions. That is, event 2 was characterized by low wind speeds and variable wind direction. One sampling event (i.e. event 1) is not adequate to reach the above stated conclusion.

Comment A.1-2: In general, the discussion of potential human receptors included in the RI is adequate. However, additional information is necessary to assess human exposure potential in the Passaic River downstream of the Millington Site. Although Hart concludes various potential pathways (e.g., direct contact and fish ingestion) associated with the river, the likelihood of exposure is not examined in sufficient detail. The extent to which the Passaic River is utilized for recreational purposes (swimming, fishing) should be discussed.

Response: The pages which may address this comment are missing from the copy of the RI received by Ebasco. These are pages 6-31, 6-32 and 6-33.

Comment A.1-3: [Pertains to Great Swamp Site]

Comment A.1-4: The characterization of current groundwater use included in the RI report satisfies NCP criteria. Hart personnel conducted a door-to-door survey of residences in the vicinity of Great Swamp, White Bridge Road and New Vernon Road sites to determine the presence of domestic wells. Ten potable well samples were collected and analyzed as a result of this survey. However, Hart neglected to examine the potential for future groundwater use, an area which should be addressed according to NCP criteria.

Response: Hart addresses this comment as follows:

> "The location and use of the site renders the placement of a potable well on or downgradient of the site highly unlikely. Furthermore, there is a well developed municipal water system in the area. Therefore, no future potential risks are associated with the groundwater pathway."

This explanation is inadequate in that it lacks consideration of municipal planning. Some municipalities do not allow individual wells when a municipal water system is available. This should be confirmed. In addition, it should be determined whether there are any Municipal, County or State plans to develop a groundwater supply in the vicinity of the project.

Comment A.2: For each site (Millington and the three satellite sites), Hart presents a matrix of potential exposure pathways. The key pathways of concern are addressed. These pathways include inhalation, ingestion, and direct contact. However, the discussion of the association between these pathways and their relevant exposure points included in the RI is incomplete. For example, for the Millington Site, direct contact and ingestion are considered as potential pathways only in relation to the site itself. Because residences lie in close proximity to the east and south of the site, and because the wind flow is generally in a west-east direction, individuals could come into contact (e.g., children playing outdoors) with asbestos contaminated soil or contaminated dust inside their homes. Therefore, the ingestion and direct contact pathways should be linked with off-site as well as on-site exposure points.

Response: The revised RI neglects to address this comment. The only exposure point considered for the soil exposure pathway is the Millington Site itself. Risk characterizations were developed for direct contact and ingestion to on-site surficial soils only. In addition the following comments apply to the risk assessment:

a. Should have an exposure pathway for inhalation of fugitive dust/surface soils from site for organic and inorganic contaminants.

b. ARAR's are not primarily health based clean-up criteria. Clean-up levels should be calculated (if required) to an acceptable risk level using the models available to calculate risk (e.g., EPA requires that if more than one carcinogenic compound is detected in groundwater MCL's cannot be used for clean-up criteria).

c. Body weight for children should be 10 kg not 35 kg.

d. Use of children for carcinogenic risk assessment cannot be done unless you average the exposure over several growth periods to adulthood then add all results to determine real risk. Carcinogenic risk can only be determined over a life time.

e. Carcinogenic risk should be summed across each pathway and for each compound to estimate total risk from site.

f. Both cancer and non-cancer endpoints should be considered based on pathway exposure. Some carcinogenic compounds are not carcinogenic if exposure occurs through different routes.

Comment A.3: A discussion of potential acute and chronic health effects related to exposure to contaminants of concern is not included in the RI.

Response: The revised RI does address this comment, although a portion of the discussion (pages 6-32 and 6-33) is missing from the copy of the RI received by Ebasco.

Comment A.4: The discussion of the site's contribution to air, land, and water is included in the RI in accordance with NCP criteria. Although food chain contamination was not addressed, this matter at the site (asbestos and nickel) are not likely to bioaccumulate.

Response: This comment is adequately addressed on pages 6-49 and 6-50 of the revised RI.

Comment A.5: The impacts of contamination from the Asbestos Dump Site on neighboring land, area property values and on-site workers are not addressed in the RI report.

Response: The impacts of contamination on area property values are briefly discussed on pages 6-46 and 6-47 of the revised RI. However, impacts to on-site workers and neighboring lands have not been adequately characterized as discussed in the response to Comments A.1-1 and A.2.

Comment A.6: The likelihood of future releases if hazardous substances remain on-site is insufficiently addressed in the RI report. A more thorough integration of data relative to contaminants present at the site and their relative mobility is necessary to satisfy thi criterion. In addition, the implications of weather extremes should have been discussed.

Response: This comment has not been adequately addressed in the revised RI. Pages 6-71 and 6-72 briefly examine future risks associated with leaving the hazardous substances on-site. However, a thorough integration of data relative to contaminants present at the site and their relative mobility has not been conducted. In addition, the implication of weather extremes have not been discussed.

Comment B.1: Although the RI report did include a fairly extensive site characterization and source identification, several factors were overlooked. First, additional information is necessary regarding the location of the exposed asbestos piles and, in particular, the geographic relationship between the exposed mounds and the areas where test boring and air monitoring activities were conducted.

Second, the source of heavy metal contamination present at selected site areas should be discussed more extensively. Cadmium and nickel concentrations in surface water exceeding relevant water quality criteria were detected immediately downstream, but not upstream, of the Millington Site. A discussion of possible sources of these contaminants should have been included in the RI.

The data collected shows that cadmium is a prevalent contaminant in the water and soil media, and the data is basically consisttent in magnitude for the various sites. However, one surface water sample adjacent to the Millington Site has an indicated cadmium concentration that is over an order of magnitude greater than any other waterborne cadmium concentration reported. Either this sample is inaccurate or there is another undetected/ undiscussed source of cadmium in the river water. The inconsistency is important since it is this value that is used (appropriately as a conservative value) to compare environmental monitoring/potential release concentrations for cadmium against appropriate limits. In the RI analysis it is concluded that the cadmium is the contaminant that is most likely to exceed its corresponding limits.

Response: First, the revised RI adequately addresses the location of the asbestos mound in relation to test boring and air monitoring activities.

Second, the revised RI discusses possible sources of contaminants found in surface water on page 5-9. It is noted that the storm drain collects storm water from the entire site

in addition to Division Avenue. It is concluded that the source of metals in the storm drain discharge is not restricted to the Millington Site. However, no indication is given concerning the ratio of the site area that drains to the storm drain versus the off-site area that drains to the storm drain. This information could be useful in identifying sources of contamination.

Finally, it appears that the elevated cadmium concentration detected downstream of the Millington Site was an anomaly. Cadmium was not detected at this location in two subsequent rounds of sampling.

Comment B.2: The substance types present at the site are adequately addressed in the RI.

Response: This remains to be true in the revised RI.

Comment B.3: More information is necessary to assess the degree to which contaminants present at the site are contained, either by natural or man-made barriers.

Response: This issue is adequately discussed on page 5-1 of the revised RI.

Comment B.4: The discussion of toxicity, persistence, and other physical-chemical characteristics of the contaminants present at the site is not sufficiently addressed. The toxicities ...

Response: This issue is addressed in the revised RI on pages 6-31 to 6-46. However, pages 6-31 to 6-33 are missing from the copy of the report received by Ebasco.

Comment B.5: The RI report does not include any discussion of the estimated quantities of contaminated soil, groundwater or asbestos fill or mounds. It was stated that remediation of the asbestos mound at the Millington site was the only action that was needed at these sites. Therefore, the need for quantities of contaminated soils and groundwater was not required for this RI. (It should be noted that quantities of materials or amount of surface areas of the asbestos mounds has not been included in the report.) However, the conclusion in the RI states that remedial action is not necessary at all the sites has not been substantiated, in EPA's opinion. Therefore, the quantities of contaminated materials is required. The volumes of contaminated materials is a key factor in determining cost-effective remedial actions.

Response: The revised RI does provide quantity estimates of contaminated soil and asbestos fill. However, how these estimates were obtained is unclear. For example, it is stated on page 5-3 that there is approximately 942,186 cubic feet of asbestos and asbestos fill material at the Millington Site. It is also claimed that the asbestos mound is 230 feet by 90 feet by 33.5 feet. This is inconsistent in that the asbestos mound alone represents 994,950 cubic feet of material. This discrepancy should be clarified.

Furthermore, on page 5-5 a concept level estimate of the quantity of contaminated soil on-site is given to be 967,600 cubic feet. It is unclear how this number relates to the above estimates. It is also stated that this is a highly conservative worst case approach. The basis for describing this approach in this manner must be discussed. Horizontal extents of contamination are assumed based on boring results; however, there is no evidence to support the contention that these dimensions are conservative.

Finally, no estimate was given for the quantity of contaminated groundwater associated with the Millington Site.

Comment B.6-1: As suggested earlier (Section A.1), the conclusion that airborne asbestos poses no public health threat is probably premature due to inadequate characterization of asbestos contamination at the site. During the subsurface investigations ambient air samples were collected and analyzed for asbestos fiber concentrations. The subsurface investigations consisted of soil borings, well installations, and test pit operations, all of which might potentially create airborne asbestos fibers by disturbing the asbestos containing soils. In order to make any valid and reliable determination concerning the concentration and distribution of contaminants from a particular source, two issues are critical: 1) monitoring/sampling must be conducted in areas (i.e., in the area where the source is most prevalent and exposed) and under conditions (e.g., weather) most relevant to a risk assessment; and 2) the sampling methodology implemented should ensure that concentrations which might pose a public health hazard would be detected. The assessment of asbestos concentrations failed to satisfy the above criteria. The major problems with the characterization are discussed (for the Millington Site).

Fred C. Hart stated that it had rained two to three days prior to drilling of the test borings and that the wind speed was essentially zero during the test pit excavation. These conditions can hardly be considered as "medium case" scenarios, for the dampening of the loose fibers (resulting from the previous rain) coupled with the still wind conditions could have significantly reduced atmospheric transport. According to the RI report, the Millington site contains the largest volume of

landfilled asbestos waste products of all four sites. The asbestos waste mound, located in the western sector of the site, is composed solely of loose fibers and is approximately 300 feet long, 95 feet wide, and 26-30 feet thick. Given that this mound lies in close proximity to residences (which border th s site to the east) and other potential receptors, it is imperative that sampling conditions are representative of typical site conditions, which does not appear to be the case collected during test pit excavations to substantitate your conclusions, claiming that the 0.2978 fibers/cc detected during these sampling episodes is below the TLV (0.5 fibers/cc). The small sample volumes (35-80L) collected during these excavations, however, are probably not sufficient to make such a determination. In addition, the sample pump and methods used during your ambient air monitoring are intended for indoor sampling (e.g., to determine occupational exposure conditions); it is not clear whether this method is applicable for outdoor sampling.

Response: To address this comment, F.C. Hart conducted additional air monitoring during March. This consisted of two 8-hour sampling events. The first sampling event was characterized by wind speeds ranging from 8-10 mph from the southwest. The second event was characterized by wind speeds ranging from 3 to 5 mph with variable direction.

The first event had wind speeds approaching critical velocities necessary for atmospheric transport of asbestos. However, the second event had low wind speeds coupled with variable direction. As a result, the second event does not provide conditions most relevant to a risk assessment and the risk assessment is dependent upon results from one 8-hour sampling event.

It is suggested that one additional event be monitored at a time when wind speeds are at critical speeds (greater than 10 mph) and the weather is dry.

Comment B.6-2: Although a discussion of the concentration and distribution of contaminants in surface water is included in the RI, your interpretation of some of these data is invalid. For example, three surface water samples taken, were not sufficient to adequately characterize the Millington site. These samples were obtained in the following areas: 1) immediately upstream of the site; 2) immediately downstream of the site; and 3) 10 miles downstream of the site at the Commonwealth Water Company intake. High levels of cadmium (563 ppb) and nickel (47 ppb) exceeding water quality criteria were detected in the sample immediately downstream (SW-1) of the site. These metals were not detected, however, in any of the upstream samples (SW-2 and SW-3). Although the furthermost downstream surface water sample did contain nickel, it did not contain cadmium. You acknowledged the presence of high cadmium levels in the one sample, but attempted to diminish the significance of the finding by asserting that cadmium was not detected in any of the

groundwater samples and was only detected in one out of three surface water samples. This conclusion is misleading because the downstream results are not distinguished from the upstream results. The fact that the sample point upstream of the site contained significant concentrations of cadmium is important nd should not be overlooked because of an invalid comparis n. Surface water concentrations of asbestos were averaged to determine the representative concentration at the site. The corresponding values for the upgradient samples were 300,000 fibers/l and 200,000 fibers/l, respectively. However, the downgradient sample contained 3,200,000 fibers/liter. Nevertheless, these values were averaged to yield a "representative" site concentration. Again, such handling of data is misleading; upgradient and downgradient sample results should be used to identify trends, not lumped to determine a mean (average) contaminant concentration.

Response: Two additional rounds of surface water samples were collected in June and October 1987. In addition to the four sampling locations (SW-1, SW-2, SW-3 and SW-22) sampled during the initial surface water investigation another sampling location (SW-00) consisting of the storm drain at the Millington Site was investigated to determine the water quality at this location. These two additional events appear to confirm the fact that the elevated cadmium level reported during the first monitoring event is an anomaly.

However, the surface water monitoring program remains insufficient in terms of adequately characterizing the Millington Site. It is stated in the revised RI that the additional monitoring station, SW-00, is not representative of the Passaic River and, furthermore, that the station receives drainage from areas other than the Millington Site. No attempt is made to report what percentage of the drainage is received from areas other than the Millington Site and there is no discussion concerning the land use of the off-site drainage area. This information is critical in trying to characterize surface water quality impacts from particular land uses.

Surface water quality impacts associated with the Millington Site are storm related. As such, it is imperative that water quality data be collected during storm events. Sampling should be conducted throughout the storm event. In this manner, estimates can be made concerning contaminant loads that are generated from the Millington Site.

Comment B.6-3: The concentration and distribution of contaminants present in indigenous flora and fauna is not addressed in the RI.

Response: Aquatic biota sampling has been conducted and is included in Section 3.10 of the report.

Comment B.6-4: Tables 1 through 4 in this report (see Appendix A) list the comparison of Ebasco's split sample analytical results and F.C. Hart's analytical results. It should be noted that all of the samples split with Ebasco were analyzed in the Contractor Laboratory Program (CLP). The parameter for the CLP and F.C. Hart determinations that differ most strongly; and consistently, is asbestos. For example, comparative analysis of sample results for NVR-3 (a groundwater monitoring well at the New Vernon Road site) yield the following: The CLP determined a concentration of 3700 fibers/cc where as F.C. Hart reported a concentration of 100 fibers/cc. The CLP determined a ...

Response: This issue is not addressed in the revised RI.

Comment B.7: Hart's discussion of the environmental fate of contaminants present at the site should be augmented to include information relating to the ultimate fate and behavior of asbestos fibers when redistributed in air or in surface water. This information is not included in the RI.

Response: See response to comments B.6-1 and B.6-2.

Comment C.1: The adequacy of hazardous substance containment has not been adequately addressed in the RI. See Section B.3 of this review for a delineation of the major deficiencies.

Response: This issue is adequately addressed on page 5-1 of the revised RI.

Comment C.2: The description of the extent of current contaminant migration presented in the RI is limited in several respects. First, any conclusion regarding the migration of site contaminants is limited by the sample design and number. No off-site samples were collected for the Asbestos Dump Site, which limits the predictive capabilities of the investigation. Also, as discussed earlier, the surface water data collected for the Millington site do not render a meaningful characterization of heavy metal migration because only two downstream points are considered; one immediately downstream and one ten miles downstream at the Commonwealth Water Company intake. Downstream samples obtained from locations (in between the two aforementioned locations) closer to relevant exposure points would have been more useful. Second, although data are presented which describe contaminant distributions at individual sample locations, these results are not assimilated to identify possible migration trends.

Response: The surface water sampling design has not been revised to include an additional station between the station immediately downstream of the site and the station at the Commonwealth Water Company intake. In addition the surface water sampling plan design and the air monitoring program are

inadequate to define the extent of current contaminant migration for the reasons already discussed in the responses to comments B.6-1 and B.6-2.

Comment C.3: The extent of potential migration of on-site contaminants is not sufficiently addressed in the RI. This is particularly true for the principal contaminant, asbestos. Because asbestos is very resistant to thermal and chemical degradation, it persists in the environment and can be widely redistributed by both natural forces and human means. The extent to which asbestos fibers could potentially migrate in the environment is governed by a complex set of factors which include rates of air and water flow, fiber diameters, agglomeration of particles and other factors which were not discussed in the RI.

Response: This issue has not been adequately addressed in the revised RI. The primary reason for this is a lack of current site characterization which limits the ability to project potential migration pathways. For example, asbestos has been found at higher levels upstream of the Millington Site than downstream. What is the source of this elevated level? In addition, the potential for Passaic River flood flows should be considered as a potential migration pathway. At a minimum flood plains should be delineated on the site plans.

Comment D.1: Permeability (slug) tests were conducted at several monitoring wells and the results are given in the report. There are several lithologic units present at each site, however, there is no discussion of varying permeabilities among these units.

Response: This issue is adequately addressed in the revised RI.

Comment D.2: In the discussion of the hydrogeology at the Millington Site, it is stated that the uppermost aquifer is found within the silt/clay unit overlying the bedrock and calculations of hydraulic conductivity and seepage velocity are given for this unit only. The slug test data indicate a slightly higher hydraulic conductivity in Well 903, which is screened in both the asbestos and the silt/clay unit, than in 905 and 907, which are screened only in the silt/clay unit. It is likely that the hydraulic conductivity and the porosity are higher in the asbestos fill and this would alter the calculated seepage velocities for the site.

Response: The slug test data reported in Table 3.6-1 no longer indicate that 903 has a slightly higher hydraulic conductivity than 905 and 907. Unfortunately no explanation is given for this new interpretation of the data, nor does this value agree with the computations presented in the appendix.

In addition to the above, the values for hydraulic conductivity and seepage velocities presented in the risk assessment on page 6-20 do not agree with those presented on page 4-14. This inconsistency should be corrected.

Comment D.3: The site specific surface water descriptions including quantity, flow rates, direction, quality, classification and uses have not been included in this report as required by the NCP criteria.

Response: This issue is adequately addressed in the revised RI.

Comment D.4: Drainage patterns have not been specifically described for each site. Surface run-off has briefly been described in terms of a transport mechanism for a surface water exposure pathway.

Response: This issue is discussed in very general terms for the project site. This section should quantify the important drainage parameters such as runoff coefficients, time of concentrations, average slopes and drainage areas.

Comment D.5: Flood potential and frequencies have not been addressed in the report as required in the NCP.

Response: This issue is discussed in very general terms. For the Millington Site it would be important to note flood elevations for a variety of flood frequencies. Flow velocities should also be reported.

Comment D.6: The report adequately describes the proximity of the site to wetland areas.

Response: This remains to be true in the revised RI.

Comment E.1: Evaporation/Precipitation information has not been included in the report as required by the NCP.

Response: This issue is adequately addressed in the revised RI.

Comment E.2: Temperature information has not been included in the report as required by the NCP.

Response: This issue is adequately addressed in the revised RI.

Comment F: A discussion of reuse/recycling of the wastes present at these sites has not been included in the report. An analysis outlining the practicality and cost-effectiveness of waste recovery, reuse and recycling should be performed.

Response: This issue has not been addressed in the revised RI.

Comment G: The RI report identifies most of the applicable and appropriate requirements for cleanup levels for groundwater. However, the report references criteria that are not always the lowest allowable concentrations. For example, on page 3-111, the report states that the value for asbestos levels in the groundwater were below detection limit (100,000 fibers/liter). It should be noted that the Clean Water Act, Water Quality Criteria states that the maximum concentration of asbestos should be 30,000 fiber/liter.

With regard to soil, the RI report states that no criteria exists for hazardous substance list chemicals. This statement is true, however, New Jersey has specified cleanup levels for eleven metals, PCB's, petroleum, hydrocarbons and total volatile organics in soils (i.e. BISE).

Response: Table 6.3-4 on page 6-52 of the revised RI adequately addresses this comment.

Comment H: The report does not discuss the long-term maintenance requirements or the responsible parties ability to maintain a remedy as required by the NCP.

Response: The revised RI does not address this comment.

Comment I: The report does include a discussion of site background information. However, in certain instances, no attempt has been made to verify or check the data used from previously written reports. For example, the geology data from a previous report could have been checked with the data taken from the field investigation done for this report to determine the continuity of the confining layer. The geological data is critical information for determining the effects of contamination of lower aquifers.

Response: This issue is adequately addressed in the revised RI.